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ADDITIONS AND CORRECTIONS

Correction to Rapid Detection of COVID-19 Causative Virus (SARS-CoV-2) in Human Nasopharyngeal Swab Specimens Using Field-Effect Transistor-Based Biosensor

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Here, we report three errors in the published article and provide corrected results. These corrections do not affect any conclusions of the work.

Correction to Figure 2D,E. Panels D and E of Figure 2 were reversed. We correct the error by switching the panels.

Correction to Figure 6. We recently realized that the clinical samples we used in Figure 6B,C of the published article were not same condition as described in the text. We used clinical samples stored in eNAT instead of in universal transport medium (UTM).

Universal transport medium is for collection, transport, maintenance, and long-term freeze storage of clinical specimens containing viruses and is suitable for cell culture, rapid antigen detection, PCR, and nucleic acid amplification assays. eNAT is a versatile molecular medium that is designed to stabilize and to preserve microbial nucleic acids and is optimized for molecular assays. eNAT contains guanidine−thiocyanate, which is used as a general protein denaturant, and this may interfere with antigen−antibody interactions.

After we noticed this sample issue, we conducted experiments to replace Figure 6B,C. We successfully confirmed that our field-effect transistor (FET) sensor clearly discriminated between patient and normal samples with statistical significance in 0.01× UTM condition (see corrected Figure 6B,C), which is the same condition for detecting antigen proteins in Figure 4E. We also performed repeated experiments for determining the limit of detection of our FET sensor. The results were quite the same as our previous data, and we compensated for the defect of statistical significance (see corrected Figure 6D,E).

In addition, we evaluated the previous results using eNAT clinical samples. When we applied the eNAT samples to the FET sensor for a short time, the FET sensor could discriminate patient samples (see original Figure 6B,C). When we applied the eNAT sample for a longer time, however, the FET sensor did not detect the patient samples, perhaps as a result of protein denaturation reagents in eNAT. Therefore, clinical samples in eNAT may not be suitable for viral antigen detection assay, although the antigen−antibody interactions may be maintained for a short time.

Correction of typos. On page 5140, line 10, the text reads:

However, the pristine graphene-based device without SARS-CoV-2 spike protein conjugation did not show any remarkable signal change after the introduction of various sample concentration (gray line in Figure 4D). The control experiment indicates that the SARS-CoV-2 spike protein is essential for...

The text should be changed to:

However, the pristine graphene-based device without SARS-CoV-2 spike antibody conjugation did not show any remarkable signal change after the introduction of various sample concentration (gray line in Figure 4B). The control experiment indicates that the SARS-CoV-2 spike antibody is essential for...

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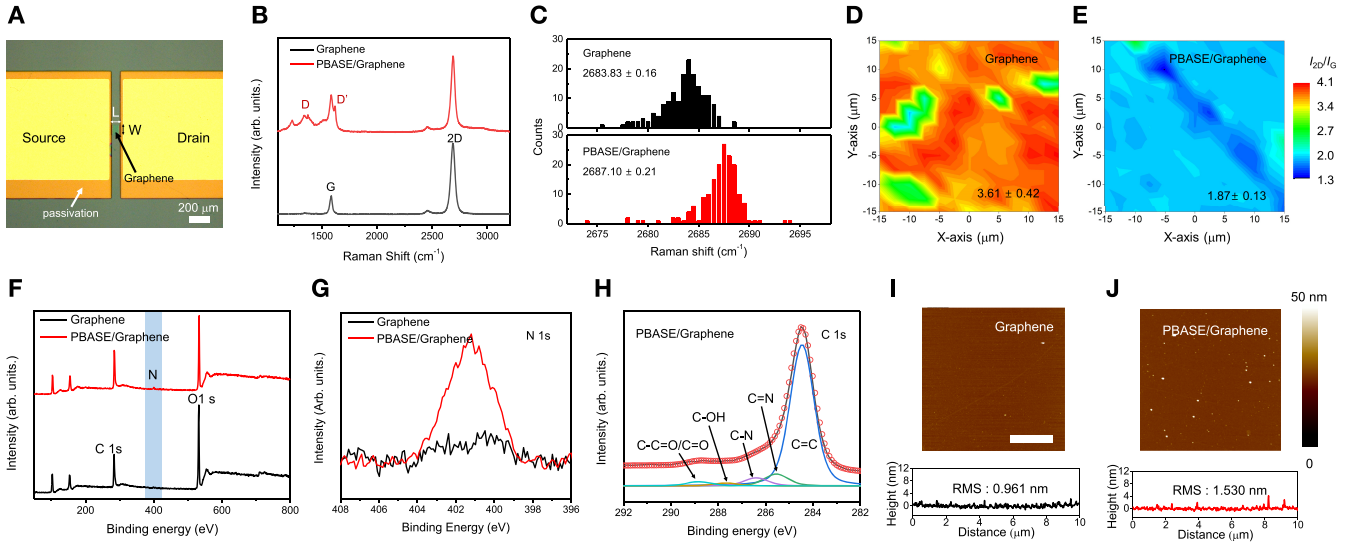

Figure 2.

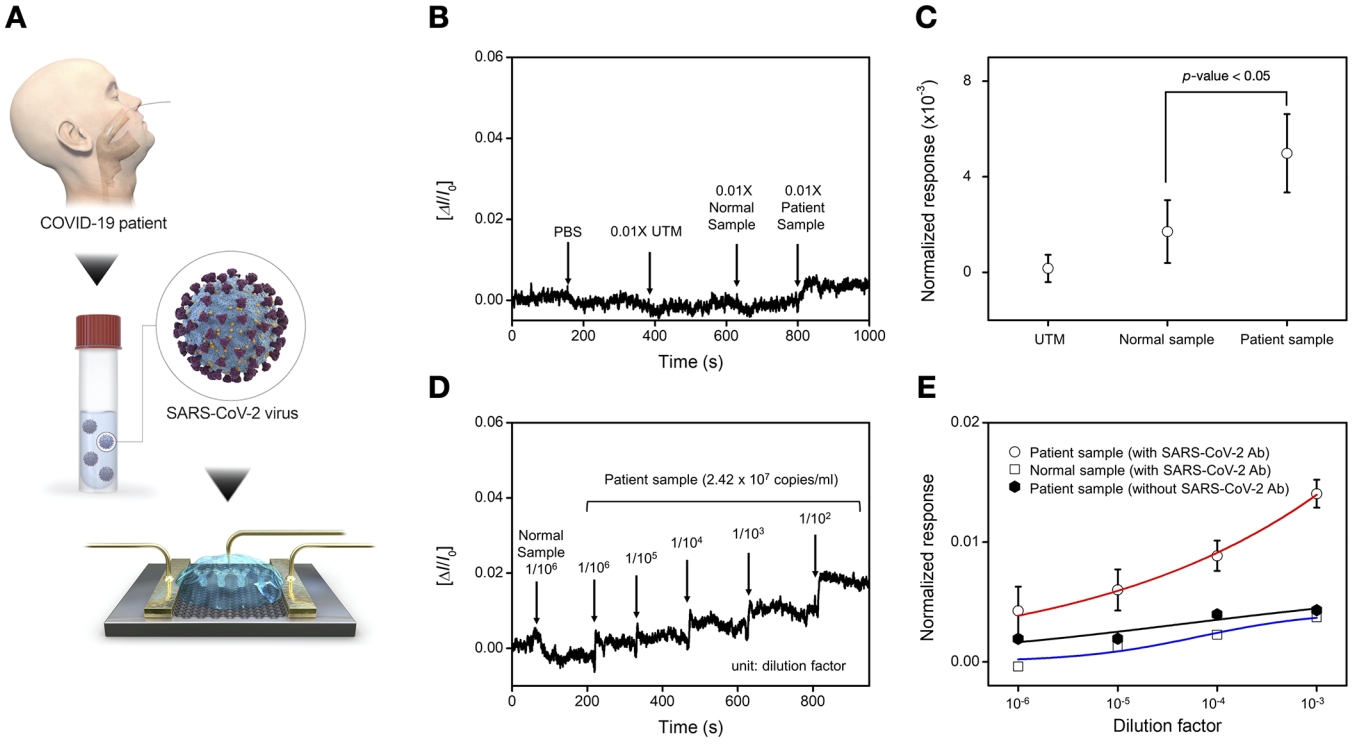

Figure 6. Detection of SARS-CoV-2 virus from clinical samples. (A) Schematic diagram for the COVID-19 field-effect transistor (FET) sensor for detection of SAR-CoV-2 virus from COVID-19 patients. (B) Real-time response of COVID-19 FET toward COVID-19 clinical sample and (C) scatter plot and error bar graph of normalized response. (D) Real-time response of COVID-19 FET toward clinical sample and (E) related dose-dependent response curve.

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